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EXAMINER	
LE, DUY K	
ART UNIT	**PAPER NUMBER**
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/975,124	FORRESTER, TIM
	Examiner	**Art Unit**
	Duy K Le	2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-69 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-69 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 33 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim described a second mixer, coupled to the local oscillator source and to the cellular CDMA antenna assembly, constructed to convert the GPS signal to a second lower frequency signal. It seems functionally logical and correct that the second mixer is constructed to convert –the cellular CDMA signal– to a second lower frequency signal.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-7, 9, 13-18, 20, 33-36, 38, 42, 43, 45, 46-48, and 59-69 are rejected under 35 U.S.C. 102(b) as being anticipated by Camp, Jr. et al. (U.S. Patent 6,097,974).

As to claim 1, Figure 8 in Camp, Jr. shows a receiver portion for selectively converting a GPS signal and a second rf signal to a lower frequency signal in a wireless handset ("wireless mobile terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half

as wide as the GPS signal chip frequency. The wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS RF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)), comprising:

a GPS control signal generator (652) for generating a GPS control signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24));

a band select switch (844) coupled to the GPS control signal generator for selecting the GPS signal or the second rf signal, responsive to the GPS control signal ("switch 844 is used to switch the two RF signals into the mixer 830" (Col. 6, lines 46-47));

a mixer (830) coupled to the band select switch for receiving the selected signal and to a local oscillator (832) for converting the selected signal to the lower frequency signal ("in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43));

a GPS antenna assembly (612) for receiving the GPS signal (see Col. 5, lines 51-57); and

a second rf signal antenna assembly (611) for receiving the second rf signal (see Col. 5, lines 51-57).

As to claims 2, 14, and 36, Figure 9 in Camp, Jr. shows the receiver portion, wherein the GPS antenna assembly and the second rf signal antenna assembly comprise the same antenna assembly (see Col. 6, lines 54-57).

As to claims 3, 5, 16, 17, 46, 48, 60, 62, and 68, the Camp, Jr. reference discloses the receiver portion and the method, wherein the second rf signal is a PCS signal ("examples of

current PCS systems include those designated IS-95, PCS-1900, and PACS in North America, DCS-1800 and DECT in Europe, and PHS in Japan" (Col. 1, lines 25-29). "Similar architectures may be used for GPS/DECT and GPS/WCS terminals and methods" (Col. 6, lines 49-50)).

As to claims 4, 15, 34, 47, and 61, Figure 8 in Camp, Jr. shows the receiver portion and the method, wherein the lower frequency signal is an IF signal ("IF Filter 646").

As to claim 6, Figure 8 in Camp, Jr. shows the receiver portion of claim 4, further comprising: an IF filter constructed to filter the IF signal ("IF Filter 646").

As to claims 7, 18, 38, 65, and 67, Figure 8 in Camp, Jr. shows the receiver portion, wherein: a low side injection of a local oscillator is used for mixing the GPS signal down to the IF signal ("in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43)).

As to claims 9, 20, 64, and 69, Figure 8 in Camp, Jr. shows the receiver portion and the method, wherein: a high side injection of a local oscillator is used for mixing the PCS signal down to the IF signal ("in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43). "Examples of current PCS systems include those designated IS-95, PCS-1900, and PACS in North America, DCS-1800 and DECT in Europe, and PHS in Japan" (Col. 1, lines 25-29). "Similar architectures may be used for GPS/DECT and GPS/WCS terminals and methods" (Col. 6, lines 49-50)).

As to claim 13, Figure 9 in Camp, Jr. shows a receiver portion for converting an RF signal to an intermediate frequency signal in a wireless communication device ("wireless mobile

terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half as wide as the GPS signal chip frequency. The wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS RF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)), comprising:

a GPS control signal generator (652) for generating a GPS control signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24));

a diplexer (911, 912, 913, 914) for isolating a GPS signal from a second rf signal ("a pair of switches 911 and 912 may be used to switch an appropriate GPS RF filter 914 or cellular filter 913. Although these filters are shown as being separate filters, they may be embodied as a shared filter with variable or switched elements" (Col. 6, lines 57-61));

a local oscillator (832) for generating a local oscillator signal;

a mixer (830), coupled to the diplexer for receiving the GPS signal and the second rf signal and to the local oscillator for receiving the local oscillator signal, for converting the received signals into a lower frequency signal ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830" (Col. 6, lines 44-47));

a lower frequency signal filter (646) coupled to the mixer and constructed to transmit a lower frequency signal that is indicative of a selected signal that is a member of the group consisting of the GPS signal and the second rf signal ("a shared IF section 430 is responsive to

both the GPS RF receiver 410 and to the wide bandwidth radiotelephone RF receiver 420" (Col. 4, line 67 to Col. 5, line 2));

a GPS antenna assembly (910) for receiving the GPS signal ("as shown in FIG. 9, a dual band GPS and cellular antenna 910 can receive both GPS and wide band radiotelephone signals" (Col. 6, lines 55-57)); and

a second rf signal antenna assembly (910) for receiving the second rf signal ("as shown in FIG. 9, a dual band GPS and cellular antenna 910 can receive both GPS and wide band radiotelephone signals" (Col. 6, lines 55-57)).

As to claim 33, Figure 7 in Camp, Jr shows a receiver portion for receiving a GPS signal and a cellular CDMA signal ("wireless mobile terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half as wide as the GPS signal chip frequency. The wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS RF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)) comprising:

a GPS control signal generator (652) for generating a GPS control signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24));

a local oscillator source (732) configured to generate a GPS local oscillator signal and a cellular CDMA local oscillator signal wherein the GPS control signal generator is coupled to the local oscillator source for selecting one of a member of a group consisting of the cellular CDMA local oscillator signal and the GPS local oscillator signal ("in the embodiment of FIG. 7, the

circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43));

a GPS antenna assembly (612) for receiving the GPS signal;

a cellular CDMA antenna assembly (611) for receiving the cellular CDMA signal;

a first mixer (630) coupled to the local oscillator source and to the GPS antenna assembly, the mixer constructed to convert the GPS signal to a first lower frequency signal ("the elements of FIG. 7 correspond to those of FIG. 6 except that a common oscillator 732 is used for both the GPS mixer 630 and the wide bandwidth radiotelephone mixer 640" (Col. 6, lines 29-32). "In the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43));

a second mixer (640) coupled to the local oscillator source and to the cellular CDMA antenna assembly, the mixer constructed to convert –the cellular CDMA signal– to a second lower frequency signal ("the elements of FIG. 7 correspond to those of FIG. 6 except that a common oscillator 732 is used for both the GPS mixer 630 and the wide bandwidth radiotelephone mixer 640" (Col. 6, lines 29-32). "In the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43));

a band pass filter (646) coupled to the first mixer and to the second mixer, the filter configured to transmit one of a member of the group consisting of the first lower frequency signal and the second lower frequency signal (see Col. 5, lines 11-21).

As to claim 35, Figure 9 in Camp, Jr. shows the receiver portion of claim 33, wherein the first and second mixers are the same mixer (830) (See Col. 6, lines 54-64).

As to claim 42, Figure 8 in Camp, Jr. shows the receiver portion of claim 33, further comprising: a band select switch (844) coupled between the GPS antenna assembly (612) and the first mixer (830) for selecting the GPS signal ("switch 844 is used to switch the two RF signals into the mixer 830" (Col. 6, lines 46-47)).

As to claim 43, Figure 9 in Camp, Jr. shows the receiver portion of claim 33, further comprising: a diplexer (911, 914, 912) coupled between the GPS antenna (910) and the first mixer (830) for coupling the GPS signal to the first mixer ("a pair of switches 911 and 912 may be used to switch an appropriate GPS RF filter 914 or cellular filter 913. Although these filters are shown as being separate filters, they may be embodied as a shared filter with variable or switched elements" (Col. 6, lines 57-61)).

As to claim 45, Figure 8 in Camp, Jr. shows the receiver portion of claim 33, further comprising: a second rf signal antenna assembly (611) coupled to the first mixer (830) for receiving a second rf signal and to the local oscillator (832) for converting, responsive to the GPS control signal, either the GPS signal or the second rf signal to the first lower frequency signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24). "FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48)).

As to claim 59, Figure 8 in Camp, Jr. discloses a method of down converting a GPS signal to an intermediate frequency signal that is indicative of the GPS signal ("wireless mobile terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half as wide as the GPS signal chip frequency. The wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS IF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)), comprising:

providing a mixer (830) configured to convert a second rf signal and the GPS signal to a lower frequency signal ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48));

mixing, using the mixer, the second rf signal with a first local oscillator signal; generating a GPS control signal ("in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43));

decoupling the second rf signal from the mixer, responsive to the GPS control signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24). "FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48));

mixing, using the mixer, the GPS signal with a second local oscillator signal ("in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43)).

As to claim 63, Figure 8 in Camp, Jr. discloses the method of claim 62, further comprising:

producing a first IF signal, indicative of the PCS signal ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48));

producing a second IF signal, indicative of the GPS signal ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48));

providing a filter configured to filter the first IF signal and the second IF signal (see Col. 5, lines 11-29);

filtering, using the filter, the first IF signal (see Col. 5, lines 11-29);

filtering, using the filter, the second IF signal (see Col. 5, lines 11-29).

As to claim 66, Figure 8 in Camp, Jr. discloses a method of using a mixer and a filter for processing both a GPS signal and a second rf signal ("wireless mobile terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half as wide as the GPS signal chip

frequency. The wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS RF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)) comprising:

providing a mixer (830) configured to receive the GPS signal and the second rf signal ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48));

coupling the GPS signal and the second rf signal to the mixer ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48));

generating a GPS control signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24));

coupling a first local oscillator signal or a second local oscillator signal to the mixer responsive to the GPS control signal ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830. As with FIG. 7, the oscillator may be readjusted to supply the appropriate frequency signal" (Col. 6, lines 44-48));

mixing, using the mixer, both the GPS signal and the second rf signal to a first IF signal and a second IF signal (see Col. 5, lines 11-20);

selecting, using an IF filter, either the first or the second IF signal for further processing ("the present invention can provide shared IF processing of the GPS and wide bandwidth radiotelephone signals and a shared dispreading process including demodulation/correlation/ baseband processing. Accommodation may be made for the differing RF frequencies that are received at similar bandwidths" (Col. 5, lines 24-29)).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 8, 10-11, 19, 21, 39, 40, 41, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,097,974 to Camp, Jr. et al. in view of Olsen (U.S. Patent Application Publication 2003/0064699 A1).

As to claims 8, 19, and 39, the Camp, Jr. reference discloses the receiver portion of claims 7, 13, and 38. However, it does not expressly disclose an oscillating frequency of the local oscillator is substantially equal to 1391 MHz. The Olsen reference teaches an oscillating frequency of the local oscillator is substantially equal to 1391 MHz ("the output oscillating signal 52 is received, in accordance with the invention, at a divide-by-one-and-a-half frequency translator 64, which produces a GPS LO signal LO(GPS) having a frequency of about 1395 MHz. Mixer 44, in this embodiment, is a low-side mixer, and so the mixer 44 produces an IF

signal, GPS(IF), whose frequency is also about 180 MHz. For example, 1575 MHz minus 1395 MHz equals to 180 MHz" (page 3, col. 2, paragraph [0031]. See also Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr. wherein an oscillating frequency of the local oscillator is substantially equal to 1391 MHz, as taught by Olsen, in order to down-convert the received GPS signal to the same common IF frequency of 180 MHz.

As to claim 10, the Camp, Jr. reference discloses the receiver portion of claim 9. However, it does not expressly disclose an oscillating frequency of the local oscillator is substantially equal to 2144 MHz. The Olsen reference teaches an oscillating frequency of the local oscillator is substantially equal to 2144 MHz ("in one embodiment, when a PCS RF signal is being received, the VCO 50 produces an output oscillating signal 52 having a frequency falling within the range of 2110 to 2170 MHz" (page 3, col. 2, lines 3-6). "The mixer 40 thus produces an IF signal, PCS(IF), whose frequency is about 180 MHz, and 2110 MHz minus 1930 MHz equals 180 MHz. FIG. 2 shows a compilation of these frequencies" (page 3, col. 2, lines 16-20)).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr. wherein an oscillating frequency of the local oscillator is substantially equal to 2144 MHz, as taught by Olsen, in order to down-convert the received PCS signal to a common IF frequency.

As to claims 11, 21, and 41, the Camp, Jr. reference discloses the receiver portion of claims 4, 15, and 34. However, it does not expressly disclose the IF signal is substantially equal

to 183.6 MHz. The Olsen reference teaches the IF signal is substantially equal to 183.6 MHz (see Figure 2, and page 3, col. 2, paragraph [0031] and lines 16-20).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr. wherein the IF signal is substantially equal to 183.6 MHz, as taught by Olsen, in order to down-convert the received signals to a common IF frequency.

As to claims 40 and 49, the Camp, Jr. reference discloses the receiver portion of claims 34 and 47. However, it does not disclose a divide by two circuit coupled between the local oscillator source and the second mixer for dividing an initial local oscillator signal by two to produce the second local oscillator signal wherein: a high side injection of a local oscillator is used for mixing the cellular CDMA signal down to the IF signal. The Olsen reference teaches a divide by two circuit coupled between the local oscillator source and the second mixer for dividing an initial local oscillator signal by two to produce the second local oscillator signal wherein: a high side injection of a local oscillator is used for mixing the cellular CDMA signal down to the IF signal (see Figure 1 and page 3, col. 2, paragraph [0030]).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr. to further comprise a divide by two circuit coupled between the local oscillator source and the second mixer for dividing an initial local oscillator signal by two to produce the second local oscillator signal wherein: a high side injection of a local oscillator is used for mixing the cellular CDMA signal down to the IF signal, as taught by Olsen, in order to down-convert the received cellular CDMA signal to a common IF frequency.

7. Claims 12, 22, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,097,974 to Camp, Jr. et al. in view of Nobusawa et al. (U.S. Patent 5,390,357).

As to claims 12, 22, and 37, Figures 7, 8, and 9 in Camp, Jr. show the receiver portion of claims 3, 16, and 33, further comprising:

a GPS low noise amplifier (616) coupled to the GPS antenna and to the band select switch (844) / diplexer (911, 912, 913, 914) / first mixer (630) for amplifying the GPS signal (see Col. 5, lines 51-64);

a PCS low noise amplifier (615) coupled to the PCS antenna and to the band select switch (844) / diplexer (911, 912, 913, 914) / second mixer (640) for amplifying the PCS signal (see Col. 5, lines 51-64);

a power supply for supplying power to the GPS low noise amplifier and to the PCS low noise amplifier (it is inherent that a power supply is in a radiotelephone terminal for supplying power to the components of the receiver portion); and

the GPS control signal generator (652) ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24))

However, the Camp, Jr. reference does not disclose the GPS control signal generator is coupled:

> to a power line of the GPS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on; and
>
> to a power line of the PCS low noise amplifier for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off.

The Nobusawa reference teaches the GPS control signal generator is coupled to a power line of the GPS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on; and to a power line of the PCS low noise amplifier for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off (see Abstract; Figure 1; and Col. 1, line 60 to Col. 2, line 38).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr. wherein the GPS control signal generator is coupled to a power line of the GPS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on; and to a power line of the PCS low noise amplifier for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off, as taught by Nobusawa, in order to reduce the overall power consumption of the receiver.

8. Claims 23-27, 29, 31, 44, and 50-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,097,974 to Camp, Jr. et al. in view of Peterzell et al. (U.S. Patent 6,694,129).

As to claim 23, Figure 7 in Camp, Jr. shows a receiver portion for converting a GPS signal and a second rf signal to an intermediate frequency signal ("wireless mobile terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half as wide as the GPS signal chip frequency. The wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS RF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)) comprising:

a GPS control signal generator (652) for generating a GPS control signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24));

a local oscillator source (732) configured to generate a GPS local oscillator signal and a second rf signal local oscillator signal wherein the GPS control signal generator is coupled to the local oscillator source for selecting one of a member of a group consisting of the rf signal local oscillator signal and the GPS local oscillator signal ("in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43));

a GPS antenna assembly (612) for receiving the GPS signal;

a second rf signal antenna assembly (611) for receiving the second rf signal;

a mixer (630, 640) coupled to the local oscillator source and to the duplexer, the mixer constructed to convert the second rf signal to a first lower frequency signal and to convert the GPS signal to a second lower frequency signal ("the elements of FIG. 7 correspond to those of FIG. 6 except that a common oscillator 732 is used for both the GPS mixer 630 and the wide bandwidth radiotelephone mixer 640" (Col. 6, lines 29-32). "In the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43));

a band pass filter (646) coupled to the mixer, the filter configured to transmit one of a member of the group consisting of the first lower frequency signal and the second lower frequency signal (see Col. 5, lines 11-21).

However, the Camp, Jr. reference does not disclose a duplexer coupled to the GPS antenna assembly and to the second rf signal antenna assembly and configured to transmit the GPS signal and the second rf signal. The Peterzell reference teaches a duplexer coupled to the GPS antenna assembly and to the second rf signal antenna assembly and configured to transmit the GPS signal and the second rf signal ("interface 305" in Figure 5 and Col. 7, line 66 to Col. 8, line 57).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr. to comprise a duplexer coupled to the GPS antenna assembly and to the second rf signal antenna assembly and configured to transmit the GPS signal and the second rf signal, as taught by Peterzell, in order to isolate received RF signals from transmitted RF signals such that a receiver and a transmitter may both use the same antenna.

As to claim 24, Camp, Jr.-Peterzell discloses the receiver portion of claim 23. Figure 9 in Camp, Jr. further shows the GPS and second rf signal antenna assemblies are the same antenna assembly (see Col. 6, lines 54-57).

As to claim 25, Camp, Jr.-Peterzell discloses the receiver portion of claim 23. Figure 8 in Camp, Jr. further shows the lower frequency signal is an IF signal ("IF Filter 646").

As to claims 26 and 27, Camp, Jr.-Peterzell discloses the receiver portion, wherein the second rf signal is a PCS signal (Camp, Jr.; "examples of current PCS systems include those designated IS-95, PCS-1900, and PACS in North America, DCS-1800 and DECT in Europe, and PHS in Japan" (Col. 1, lines 25-29). "Similar architectures may be used for GPS/DECT and GPS/WCS terminals and methods" (Col. 6, lines 49-50)).

As to claim 29, Camp, Jr.-Peterzell discloses the receiver portion of claim 25, wherein: a low side injection of a local oscillator is used for mixing the GPS signal down to the IF signal (Camp, Jr.; "in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43). See also Figure 8).

As to claim 31, Camp, Jr.-Peterzell discloses the receiver portion of claim 27, wherein: a high side injection of a local oscillator is used for mixing the PCS signal down to the IF signal (Camp, Jr.; "in the embodiment of FIG. 7, the circuit that controls the oscillator 732 may be adjusted to supply the appropriate frequency signal and permit reception of either GPS or wide band radiotelephone signals" (Col. 6, lines 39-43). "Examples of current PCS systems include those designated IS-95, PCS-1900, and PACS in North America, DCS-1800 and DECT in Europe, and PHS in Japan" (Col. 1, lines 25-29). "Similar architectures may be used for GPS/DECT and GPS/WCS terminals and methods" (Col. 6, lines 49-50)).

As to claim 44, the Camp, Jr. reference discloses the receiver portion of claim 33. However, it does not disclose a duplexer coupled between the GPS antenna and the first mixer for coupling the GPS signal to the first mixer. The Peterzell reference teaches a duplexer coupled between the GPS antenna and the first mixer for coupling the GPS signal to the first mixer ("interface 305" in Figure 5 and Col. 7, line 66 to Col. 8, line 57).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr. to comprise a duplexer coupled between the GPS antenna and the first mixer for coupling the GPS signal to the first

mixer, as taught by Peterzell, in order to isolate received RF signals from transmitted RF signals such that a receiver and a transmitter may both use the same antenna.

As to claim 50, the Camp, Jr. reference discloses a wireless handset ("wireless mobile terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half as wide as the GPS signal chip frequency. The wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS RF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)), comprising:

a receiver for receiving a plurality of rf signals (see Figure 9);

a battery coupled to the transceiver for supplying power to the transceiver (it is inherent that a battery is in a wireless phone for supplying power); and

a case enclosing the transceiver and the battery (it is inherent that a wireless phone has case for enclosing the transceiver and battery),

the receiver (shown in details in Figure 9) comprising:

an rf control signal generator (652) for generating an rf control signal ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24));

a band select switch (911, 912) coupled to the rf control signal generator for selecting between the plurality of rf signals, responsive to the rf control signal ("a pair of switches 911 and 912 may be used to switch an appropriate GPS RF filter 914 or cellular filter 913. Although these filters are shown as being separate filters, they may be embodied as a shared filter with variable or switched elements" (Col. 6, lines 57-61));

a mixer (830), coupled to the band select switch for receiving the selected signal and to a local oscillator (832), for converting the selected signal to an IF signal ("FIG. 8 illustrates another embodiment wherein a common mixer 830 and a common local oscillator 832 are provided. Thus, switch 844 is used to switch the two RF signals into the mixer 830" (Col. 6, lines 44-47));

an antenna assembly (910) coupled to the mixer for receiving the plurality of rf signals.

However, the Camp, Jr. reference does not expressly disclose a transceiver for transmitting and receiving a plurality of rf signals. The Peterzell reference teaches a transceiver for transmitting and receiving a plurality of rf signals ("transceivers are wireless devices that integrate a transmitter and receiver in a single package. Transceivers enable nearly instantaneous two-way communications. Examples of transceivers include two-way radios, walkie-talkies, two-way pagers, and wireless phones" (Col. 1, lines 44-48). "Similarly, in a dual upconversion transmitter, analog I and Q baseband signals are first upconverted to an IF signal, and the IF signal is then upconverted to a transmitted RF signal" (Col. 4, lines 17-20). See Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the wireless handset of Camp, Jr. to comprise a transceiver for transmitting and receiving a plurality of rf signals, as taught by Peterzell, in order to enable nearly instantaneous two-way communications.

As to claim 51, Camp, Jr.-Peterzell discloses the wireless handset of claim 50, wherein the mixer is a passive mixer (Camp, Jr.; "wireless mobile terminals according to the present invention include a GPS Radio Frequency (RF) receiver and a wide bandwidth radiotelephone RF receiver having bandwidth that is at least half as wide as the GPS signal chip frequency. The

wireless mobile terminals also include a shared Intermediate Frequency (IF) section that is responsive to both the GPS IF receiver and to the wide bandwidth radiotelephone RF receiver" (Col. 3, lines 21-28)).

As to claim 52, Camp, Jr.-Peterzell discloses the wireless handset of claim 50, further comprising a low noise amplifier (915 in Figure 9, Camp, Jr.) coupled between the band select switch and the mixer.

As to claim 53, Camp, Jr.-Peterzell discloses the wireless handset of claim 50. Figure 3 in Peterzell further teaches a low noise amplifier (80) coupled between the mixer (90, 95) and an IF band pass filter (70).

As to claim 54, Camp, Jr.-Peterzell discloses the wireless handset of claim 50, wherein the plurality of rf signals comprises a GPS signal (Camp, Jr.; "as shown in FIG. 9, a dual band GPS and cellular antenna 910 can receive both GPS and wide band radiotelephone signals" (Col. 6, lines 55-57)).

As to claim 55, Camp, Jr.-Peterzell discloses the wireless handset of claim 50, wherein the plurality of rf signals comprises a cellular CDMA signal (Camp, Jr.; "as shown in FIG. 9, a dual band GPS and cellular antenna 910 can receive both GPS and wide band radiotelephone signals" (Col. 6, lines 55-57). "Preferably, the wide bandwidth radiotelephone RF receiver 420 is a CDMA or TDMA RF receiver" (Col. 5, lines 4-5)).

As to claim 56, Camp, Jr.-Peterzell discloses the wireless handset of claim 50, wherein the plurality of rf signals comprises a GSM signal (Peterzell; see Col. 5, lines 21-24 and Figure 5).

As to claim 57, Camp, Jr.-Peterzell discloses the wireless handset of claim 50, wherein the plurality of rf signals comprises a cellular CDMA signal and a GPS signal (Camp, Jr.; "as shown in FIG. 9, a dual band GPS and cellular antenna 910 can receive both GPS and wide band radiotelephone signals" (Col. 6, lines 55-57). "Preferably, the wide bandwidth radiotelephone RF receiver 420 is a CDMA or TDMA RF receiver" (Col. 5, lines 4-5)).

As to claim 58, Camp, Jr.-Peterzell discloses the wireless handset of claim 50, wherein the plurality of rf signals comprises a cellular CDMA signal, a GPS signal and a PCS signal (Peterzell; see Col. 5, lines 21-24 and Figure 5).

9. Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,097,974 to Camp, Jr. et al. in view of Peterzell et al. (U.S. Patent 6,694,129) and further in view of Nobusawa et al. (U.S. Patent 5,390,357).

As to claim 28, Camp, Jr.-Peterzell discloses the receiver portion of claim 26. Figure 8 in Camp, Jr. shows the receiver portion comprising:

a GPS low noise amplifier (616) coupled to the GPS antenna and to the duplexer for amplifying the GPS signal (see Col. 5, lines 51-64);

a PCS low noise amplifier (615) coupled to the PCS antenna and to the duplexer for amplifying the PCS signal (see Col. 5, lines 51-64);

a power supply for supplying power to the GPS low noise amplifier and to the PCS low noise amplifier (it is inherent that a power supply is in a radiotelephone terminal for supplying power to the components of the receiver portion); and

the GPS control signal generator (652) ("that information may be stored in the memory 654, and then modes may be switched from GPS reception to CDMA cellular telephone usage" (Col. 6, lines 22-24))

However, Camp, Jr.-Peterzell does not disclose the GPS control signal generator is coupled:

> to a power line of the GPS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on; and
>
> to a power line of the PCS low noise amplifier for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off.

The Nobusawa reference teaches the GPS control signal generator is coupled to a power line of the GPS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on; and to a power line of the PCS low noise amplifier for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off (see Abstract; Figure 1; and Col. 1, line 60 to Col. 2, line 38).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr.-Peterzell wherein the GPS control signal generator is coupled to a power line of the GPS low noise amplifier for coupling the power supply to the GPS low noise amplifier when the GPS control signal is on; and to a power line of the PCS low noise amplifier for coupling the power supply to the PCS low noise amplifier when the GPS control signal is off, as taught by Nobusawa, in order to reduce the overall power consumption of the receiver.

10. Claims 30 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,097,974 to Camp, Jr. et al. in view of Peterzell et al. (U.S. Patent 6,694,129) and further in view of Olsen (U.S. Patent Application Publication 2003/0064699 A1).

As to claim 30, Camp, Jr.-Peterzell discloses the receiver portion of claim 23. However, it does not expressly disclose an oscillating frequency of the local oscillator is substantially equal to 1391 MHz. The Olsen reference teaches an oscillating frequency of the local oscillator is substantially equal to 1391 MHz ("the output oscillating signal 52 is received, in accordance with the invention, at a divide-by-one-and-a-half frequency translator 64, which produces a GPS LO signal LO(GPS) having a frequency of about 1395 MHz. Mixer 44, in this embodiment, is a low-side mixer, and so the mixer 44 produces an IF signal, GPS(IF), whose frequency is also about 180 MHz. For example, 1575 MHz minus 1395 MHz equals to 180 MHz" (page 3, col. 2, paragraph [0031]. See also Figure 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr.-Peterzell wherein an oscillating frequency of the local oscillator is substantially equal to 1391 MHz, as taught by Olsen, in order to down-convert the received GPS signal to the same common IF frequency of 180 MHz.

As to claim 32, Camp, Jr.-Peterzell discloses the receiver portion of claim 26. However, it does not expressly disclose the IF signal is substantially equal to 183.6 MHz. The Olsen reference teaches the IF signal is substantially equal to 183.6 MHz (see Figure 2, and page 3, col. 2, paragraph [0031] and lines 16-20).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the receiver portion of Camp, Jr.-Peterzell wherein the IF signal is substantially equal to 183.6 MHz, as taught by Olsen, in order to down-convert the received signals to a common IF frequency.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Bell, III et al. (U.S. Patent 6,088,348) discloses configurable single and dual VCOs for dual- and tri-band wireless communication systems.

b. Krasner (U.S. Patent Application Publication 2002/0044087 A1) discloses GPS receiver and method for processing GPS signals.

c. Eaves et al. (U.S. Patent Application Publication 2003/0054775 A1) discloses diplexer.

d. Heinonen (U.S. Patent 5,896,562) discloses transmitter/receiver for transmitting and receiving of an RF signal in two frequency bands.

e. Dean et al. (U.S. Patent 5,881,369) discloses dual mode transceiver.

f. Dolle et al. (U.S. Patent 6,609,010) discloses dual frequency band transceiver.

g. Ruitenburg (U.S. Patent 5,867,771) discloses circuit arrangement comprising a tuner and a splitter-modulator.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duy K Le whose telephone number is 703-305-5660. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F Urban can be reached on 703-305-4385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Duy Le
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